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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ambarish Goswami

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05/31/2006

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EXAMINER

NGUYEN, HUONG Q

ART UNIT

PAPER NUMBER

3736

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,116	GOSWAMI, AMBARISH	
	Examiner	Art Unit	
	Helen Nguyen	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-10, 12-22 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10, 12-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 10/10/2003 and 1/18/2005 is/are acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Applicant's Amendment

2. Applicant's amendment has been received and appears fully responsive. The amendment to the specification appears to comply with 35 U.S.C. 132(a) regarding new matter. **Claims 5 and 11** have been cancelled and **Claims 15-22** have been added. **Claims 1-3, 6-10, and 12-14** stand amended and **Claim 4** remains in original form. **Claims 1-4, 6-10, and 12-22** remain pending.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-4, 13, 15-17, and 19** are rejected under 35 U.S.C. 102(b) as being anticipated by Yamato et al (US Pat No. 5957870).

5. In regards to **Claim 1**, Yamato et al disclose:

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determining a first set of data that comprises positions of a first limb as the first limb performs movement, wherein the first limb is a foot (1) of a leg (Col.5, line 49-50) and the movement is walking (Col.2, line 10-15);

determining a second set of data that comprises positions of a second limb as the second limb performs a similar movement, wherein the second limb is the second foot used during walking (Col.2 line 10-15; Col.7 line 27-29);

generating a shape, referred to as "superposed image" (22) (Col.6, line 15), based on the first set of data and the second set of data, as best seen in Figure 4 and 9 (Col.9, line 31-33);

determining a value of a characteristic of the generated shape, referred to as "feature parameter" (Col.4, line 10-17), such as step length (24) or stride length (25) (Col.6, line 19-20), as best seen in Figure 4, 9, and 11 (Col.9 line 57-67; Col.10 line 30-44).

6. In regards to **Claim 2**, Yamato et al disclose a position of the first limb includes an angle of a joint of the first limb (Col.11, line 44-49).

7. In regards to **Claim 3**, Yamato et al disclose a position of the second limb includes an angle of a corresponding joint of the second limb (Col.11, line 44-49).

8. In regards to **Claim 4**, Yamato et al disclose the movement comprises one or more cycles, wherein the walking movement being measured is inherently repeatable and thus cyclic (Col.1, line 10-15).

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9. In regards to **Claim 13**, Yamato et al disclose a system for quantifying asymmetry of body positions during movement comprising:

a first determination module, referred to as "pressure sensor" (2) (Col.5, line 50-51), configured to determine a first set of data that comprises positions of a first limb as the first limb performs the movement of walking, wherein the limb is a foot (1) (Col.5, line 49-50) of a leg, best seen in Figure 3;

a second determination module, also a "pressure sensor," configured to determine a second set of data that comprises positions of a second limb as the second limb performs a similar movement of walking, wherein the inherently dual-limbed nature of walking necessitates the use of a second pressure sensor (Col.7, line 27-29), best seen in Figure 3;

a generation module, referred to as "superposed image forming portion" (4), configured to generate a shape based on the first set of data and the second set of data (Col.6, line 45-57);

a third determination module, referred to as "feature location detecting portion" (9) (Col.8, line 48-55), configured to determine a value of a characteristic of the generated shape such as step length (24) and stride length (25) as described above, best seen in Figure 3 (Col.10, line 30-44).

10. In regards to **Claim 15**, Yamato et al disclose a position of the first limb includes a location of a portion of the first limb, in the instant case, the foot portion (1) of the leg (Col.5, line 49-50).

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11. In regards to **Claim 16**, Yamato et al disclose a position of the first limb includes a location of a joint of the first limb, such as angle, knee, or hip joints (Col.11, line 44-49).

12. In regards to **Claim 17**, Yamato et al disclose the first limb is part of the one body and the second limb is part of the same body (Col.7, line 27-29).

13. In regards to **Claim 19**, Yamato et al disclose the first limb comprising a leg connected to foot (1) used in walking (Col.5, line 49-50).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. **Claims 6-8, 10, 12, 14, 21-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al in view of Hershler et al (*Angle-Angle Diagrams in the Assessment of Locomotion*).

16. In regards to **Claim 6**, Yamato et al disclose the method rejected above but do not disclose the shape comprising an angle-angle diagram. Hershler et al disclose the collection of hip and knee angle data of both sides (i.e. the left and right) of each subject during walking (pg.117) in the form of angle-angle diagrams (Figure 4). Because

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Yamato et al already disclose body angle data, such as for the knee and hip (Col.11, line 44-49), it would have been obvious to one of ordinary skill in the art at the time the invention was made to output data obtained by Yamato et al in the form of an angle-angle diagram, as taught by Hershler et al, because such data lends itself naturally to expression in the form of an angle-angle diagram.

17. In regards to **Claim 7**, Yamato et al disclose the method described above but do not disclose the characteristic of the generated shape comprising an area of the generated shape. Hershler et al disclose body angle data in the form of angle-angle diagrams, wherein area is calculated as a useful value for statistical analysis (p.111). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the generated shape of the first and second set of data of Yamato et al, to be in the form of an angle-angle diagram as taught by Hershler et al for the reason provided above, and then similarly, modify the characteristic of said generated shape of Yamato et al as modified by Hershler et al, to be an area, as taught by Hershler et al, because such a value is a useful statistical indicator of angle-angle diagrams.

18. Similarly, in regards to **Claim 8**, Yamato et al in combination with Hershler et al disclose the characteristic of the generated shape comprising an orientation of the generated shape when the generated shape of Yamato et al is modified by Hershler et al to be in the form of an angle-angle diagram for the reason provided above. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the characteristic of said generated shape of Yamato et al as modified by

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Hershler, to comprise the calculated value as an orientation of an angle-angle diagram for useful statistical analysis, as taught by Hershler et al (pg.111), as previously explained (¶15).

19. In regards to **Claim 10**, Yamato et al disclose the method rejected above but do not disclose comparing the determined value to a value of the characteristic of a shape representing a baseline movement. Hershler et al disclose comparing the calculated value, such as area, to a corresponding calculated value of a baseline movement (pg.110). Although Hershler et al do not explicitly state comparison to a baseline movement, all comparisons inherently require at least two sets of data, at least one of which is designated as the baseline, depending upon the nature of the comparison. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Yamato et al to include a comparison of the determined value to a value of the characteristic of a shape representing a baseline movement to facilitate better data analysis.

20. In regards to **Claim 12**, Yamato et al disclose a method comprising determining a first and second set of data that comprises positions of a first and second limb respectively, as both limbs perform a movement (please see **Claim 1**). However, Yamato et al do not disclose generating a cyclogram based on the first and second set of data, determining a value of a characteristic of the generated cyclogram, and comparing the determined value to a value of the characteristic of a cyclogram representing baseline

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movement. Yamato et al do disclose obtaining body angle data, such as the knee and hip joint data (Col.11, line 44-49).

21. Hershler et al disclose all those elements that Yamato et al is lacking. Although Hershler et al do not explicitly state comparison to a baseline movement, all comparisons inherently require at least two sets of data, at least one of which is designated as the baseline, depending upon the nature of the comparison. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the angle data obtained by Yamato et al in the form of a cyclogram, as taught by Hershler et al (Figure 4), because such data lends itself naturally to expression in the form of a cyclogram. Similarly, it would have been obvious to determine a value of a characteristic of the generated cyclogram, such as area, as taught by Hershler et al, because said value is useful for statistical analysis (p.111). Finally, it would also have been obvious to compare the determined value to a value of the characteristic of a cyclogram representing baseline movement, as taught by Hershler et al (p.110), to facilitate improved data analysis.

22. In regards to **Claim 14**, Yamato et al disclose a method comprising determining a first and second set of data that comprises positions of a first and second limb respectively, as both limbs perform a movement, generating a shape based on the first and second set of data, and determining a value of a characteristic of the generated shape, as elaborated in the rejection of **Claim 1**. However, Yamato et al do not disclose said method provided on a computer program product including instructions on computer readable medium.

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23. Hershler et al disclose generating the body angle data, such as body angle data of Yamato et al (Col.11, line 44-49), in the form of an angle-angle diagram as explained above, as well as determining a value of said angle-angle diagram, such as area.

Furthermore, Hershler et al disclose a computer program product, including instructions on computer readable medium, written in Fortran IV language to automate the calculation of a value, such as area, based upon sets of data (pg.117-118). Thus, it is said that Hershler et al teaches automating a method relevant to the method disclosed by Yamato et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to automate the method of Yamato et al using a computer program product comprising instructions on computer readable medium, as taught by Hershler et al, to automate the analysis process and make it more efficient.

24. In regards to **Claim 21**, Hershler et al disclose comparing the determined value to a corresponding characteristic representing a baseline movement, as explained in the rejection of **Claim 10**. Hershler et al further disclose comparison to an angle-angle diagram representing a perfectly symmetrical gait, wherein Hershler et al disclose that it is of interest to compare such data with those for pathological conditions (pg.123). Since it is well known in the art that individuals with pathological gait problems do not have a symmetrical gait, comparison of angle-angle characteristics with those having pathological conditions would equate to a comparison of angle-angle characteristics of one with a perfectly symmetrical gait.

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25. In regards to **Claim 22**, Yamato et al disclose the movement comprises one or more cycles, wherein the walking movement being measured is inherently repeatable and thus cyclic (Col.1, line 10-15).

26. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al in view of Hershler et al, further in view of Goswami (*A New Gait Parameterization Technique by Means of Cyclogram Moments: Application to Human Slope Walking*).

Yamato et al in combination with Hershler et al disclose calculating a characteristic of the generated shape, wherein the generated shape is an angle-angle diagram, as motivated by the reason provided above (see rejection of **Claim 6**). However, Yamato et al in combination with Hershler et al do not disclose that characteristic as a minimum moment magnitude. Hershler et al also disclose calculating a value from an angle-angle diagram as a means of analysis (pg.111), indicating that there are numerous ways to quantify shape (pg.124).

27. Goswami discloses calculating the moment magnitude of a cyclogram or angle-angle diagram for shape characterization (pg.3). Although Goswami does not explicitly disclose the calculation of the minimum moment magnitude, it is inherent that any calculation allows for ranges between the minimum and maximum. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Yamato et al as modified by Hershler et al, to calculate the minimum moment magnitude as the characteristic of the shape, as taught by Goswami, to allow another effective method for quantifying shape.

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28. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al in view of Nishibe et al (US Pub No. 20040059264). Yamato et al disclose the method rejected above wherein the first limb is part of one body but does not disclose the second limb part of a different body. Nishibe et al disclose comparison of walking data from a physical sound person with walking data from disabled persons, such as those paralyzed on either the right or left side of the body (§¶0053, 0063, 0065, 0069, 0074) for more in-depth walking analysis. Thus, it is said that Nishibe et al disclose comparisons between two different subjects. Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Yamato et al to include comparisons with other people, as taught by Nishibe et al, wherein said comparisons would translate into gathering data for a first limb that is part of one body and a second limb that is part of a different body, to further enhance the walking analysis by including data gathered from different relevant bodies in addition to data gathered from the same body.

29. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al in view of Kolich (US Pat No. 6290658). Yamato et al disclose the method rejected above but do not disclose the first limb comprising an arm. Kolich teaches that proper arm movement is important for proper form during walking, thus providing motivation to include an arm in analysis of walking (Col.1, line 28-54). Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Yamato et al to include the first limb comprising an arm, to further enhance the walking analysis by including the effects of arm movement.

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Response to Arguments

30. Applicant's arguments with respect to **Claims 1-4, 6-10, 12-22** have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

31. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

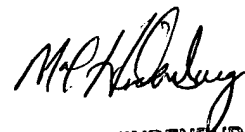
32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Nguyen whose telephone number is 571-272-8340. The examiner can normally be reached on Monday - Friday, 8 am - 5 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HQN
5/23/2006



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